III. CLAIM AMENDMENTS

1. (Original) A signal separation method for restoring original multidimensional signals from observed data where multiple multidimensional signals are mixed, the method comprising the steps of:

selecting a specific separation matrix by optimizing at least either one of H-infinity norm type of cost function or MinMax strategy type of cost function for said observed data; and

multiplying the observed data by the selected separation matrix to restore the original multidimensional signals.

2. (Original) A signal separation method for estimating and restoring original multidimensional signals from observed data where multiple signals including the original multidimensional signals are mixed, the method comprising the steps of:

introducing a cost function for the observed data, the cost function being based on a function that has a monotonously increasing characteristic;

estimating a separation matrix using an adaptive filter that optimizes the introduced cost function; and

multiplying the observed data by the estimated separation matrix to estimate and restore the original multidimensional signals.

3. (Original) The method according to claim 2, wherein the step of estimating a separation matrix comprises using the adaptive filter that minimizes the cost function in terms of the separation matrix, wherein the introduced cost function is an exponential type function.

4. (Currently Amended) A method for separating and extracting original signals from observed signals where multiple multidimensional signals including the original signals are mixed, the method comprising the steps of:

reading the observed signals;

transforming a data structure in terms of the read observed signals;

subtracting an average of the observed signals from each of the observed signals, ~~of~~ which data structure has been transformed to perform zero averaging;

performing whitening on the observed signals that have undergone zero averaging;

performing separation processing on the observed signals that have undergone whitening based on a cost function having a monotonously increasing characteristic; and

performing inverse whitening as post-processing on the observed signals that have undergone the separation processing.

5. (Original) A signal processing apparatus, comprising:

means for inputting observed data where multiple signals including original multidimensional signals are mixed;

means for selecting a specific separation matrix by optimizing at least either one of H-infinity norm type of cost function or MinMax strategy type of cost function for the input observed data; and

means for multiplying the observed data by the selected separation matrix to estimate and restore the original multidimensional signals.

6. (Original) A signal processing apparatus, comprising:

means for inputting observed data where multiple multidimensional signals that are originally independent are mixed mutually;

means for estimating a separation matrix by using an adaptive filter for the input observed data, the filter optimizing a cost function based on a function that has a monotonously increasing characteristic; and

means for multiplying the observed data by the estimated separation matrix to estimate and restore the specific multidimensional signals.

7. (Original) The signal processing apparatus according to claim 6, wherein the observed data input by the input means

comprises given image data that consist of mixtures of moving picture data that are considered as three dimensional data.

8. (Original) An image processing apparatus, comprising:

means for inputting mixed image data where multiple image signals are mixed and observed;

means for estimating a separation matrix by using an adaptive filter for the input mixed image data, the filter optimizing a cost function based on a function having a monotonously increasing characteristic; and

means for multiplying the mixed image data by the estimated separation matrix to separate and extract the image signals from the mixed image data.

9. (Original) The image processing apparatus according to claim 8, wherein the adaptive filter used minimizes the cost function in terms of the separation matrix, and the function having a monotonously increasing characteristic is an exponential type function.

10. (Original) The image processing apparatus according to claim 8, wherein the input mixed image data comprises text overwritten on a background image and are observed as multiple frames.

11. (Original) The image processing apparatus according to claim 8, wherein the image signals that are separated and extracted are image signals that are used in face recognition and distinction in biometrics or image signals that are obtained by the observation and measurement by satellites.

12. (Original) A medical image processing apparatus, comprising:

means for inputting medical image data where a signal change of which interference process is unknown is contained in observed bio-image signals;

means for estimating a separation matrix by using an adaptive filter for the input medical image data, the filter optimizing a cost function based on a function having a monotonously increasing characteristic; and

means for multiplying the medical image data by the estimated separation matrix to separate and extract the observed bio-image signals from the medical image data.

13. (Original) A storage medium tangibly embodying a program readable and executable by a computer, the program comprising:

processing for introducing a cost function for observed data where multiple multidimensional signals are mixed, the

cost function being based on a function that has a monotonously increasing characteristic;

processing for estimating a separation matrix using an adaptive filter that optimizes the introduced cost function; and

processing for multiplying the observed data by the estimated separation matrix to estimate and restore the specific multidimensional signals.

14. (Original) A storage medium tangibly embodying a program readable and executable by a computer, the program comprising:

processing for selecting a specific separation matrix by optimizing at least either one of H-infinity norm type of cost function or MinMax strategy type of cost function for observed data where multiple multidimensional signals are mixed; and

processing for multiplying the observed data by the selected separation matrix to estimate and restore the specific multidimensional signal.

15. (New) A signal separation method according to claim 2, wherein the cost function is a nonlinear function of a product of the Hermitian conjugate of the separation matrix multiplied by a set of the observed data.

16. (New) A signal separation method according to claim 15, wherein the cost function is a nonlinear function alterable in response to kurtosis of observed data signals.

17. (New) A signal separation method according to claim 2, wherein the cost function is a nonlinear function alterable in response to kurtosis of observed data signals.

18. (New) An image processing apparatus according to claim 8, wherein the cost function is a nonlinear function of a product of the Hermitian conjugate of the separation matrix multiplied by the mixed image data.

19. (New) An image processing apparatus according to claim 18, wherein the cost function is a nonlinear function alterable in response to kurtosis of observed data signals.

20. (New) An image processing apparatus according to claim 8, wherein the cost function is a nonlinear function alterable in response to kurtosis of observed data signals.